REMARKS

Claims 1 - 5, 11, 18, 20, 23 - 25, 31, and 47 - 59 are pending. Claims 1, 20, 47, 52, 53, and 57 - 59 have been amended. No new matter has been introduced. Reexamination and reconsideration of this application are respectfully requested.

Applicant submits formal drawings for Figs. 1 - 4(d) as replacement copies for the originally filed informal Figs. 1 - 4(d).

In the March 31, 2005 Office Action, the Examiner rejected claims 1 - 5, 11, 18, 20, 47 - 51, 57, and 59 under 35 U.S.C. § 102(e) as being clearly anticipated by U.S. Patent No. 6,590,560 to MacDonald et al. ("the MacDonald reference"). The Examiner rejected claims 23 - 25, 31, 52 - 56, and 58 under 35 U.S.C. § 103(a) as being unpatentable over the MacDonald reference in view of U.S. Patent No. 6,504,423 to Riggio et al. ("the Riggio reference"). These rejections are respectfully traversed in so far as they are applicable to presently pending claims.

Independent claim 1, as amended, recites:

> A power converter, comprising:
> an input voltage system to receive an AC input voltage and to output a switched voltage;
> a transformer, coupled to said input voltage system, to receive the switched voltage and to output an intermediate voltage, said transformer having a primary winding and a secondary winding; and
> a boost circuit, coupled to the transformer, to receive the intermediate voltage and output an increased voltage,
> **wherein said secondary winding of said transformer is configured as a boost inductor in the boost circuit.**

As noted in an earlier Office Action, the MacDonald reference does not disclose, teach, or suggest the power converter of claim 1, as amended. The Examiner states that the MacDonald reference discloses a plurality of input voltages, a transformer, a buck regulator, cables and connectors, a voltage comparison circuit (voltage

programming circuit), a current comparison circuit (current programming circuit), where the feedback is used to control the switch and provide a driving signal. *(Office Action, page 2)*. The Examiner, on page 2, of the Office Action, does not specifically address the limitation of claim 1 which recites "wherein said secondary winding of said transformer is configured as a boost inductor in the boost circuit." The Examiner in the Response to Arguments section of the Office Action addresses the above-identified limitation and states that one of ordinary skill in the art would know from looking at Figures 2c and 2b that inductors L2 and L3 are the secondary windings of transformer T1, the double bars on top of the inductors means that they are connected to the transformer T1, and have a common core (the meaning of the doubled lines in the drawings). The Examiner further states that if the inductors were not connected as suggested by the applicant (similar to L1 of the Macdonald reference which the Examiner states is an inductor without any connection to a common core), they would not have the double bars on top. Therefore, the Examiner states that inductors L2 and L3 are secondary (windings) of transformer T1. (Office Action, pages 2 - 4).

<u>Applicant disagrees with the Examiner's statement that inductors L2 and L3 are secondary windings of transformer T1. In addition, the statement that inductors having a double bar on top means that such inductors have a common core with other inductors or transformer windings around the same core is erroneous</u>.

Firstly, the Examiner's understanding of the meaning of double bars above an inductor is incorrect. The meaning of the double bars above an inductor (or between windings of a transformer) means that inductor (or transformer) has an iron core. If there is an air core, for example, then no lines would be present. To support such

understanding of the meaning of the double bars above the inductors, the applicant has attached multiple exhibits[1] which detail that one of ordinary skill in the art would understand that double bars means the inductor has an iron core and does not mean that the every device with double bars has a common core with every other device that has double bars.

In addition, if windings are wrapped around a common core, then the schematic for a system could illustrate the common core in one of two ways. First, the core of the transformer could be elongated, as illustrated in Fig. 2A of the MacDonald reference. In the MacDonald reference, transformer T1 has a primary winding that is connected to R5 (which is coupled via the transformer to a secondary winding) and that primary winding is also connected to resistor R19. These primary windings are coupled to the same core, as illustrated by the elongated lines of iron core in Fig. 2A of the MacDonald reference.

Alternatively, if a common core is used and the secondary windings of the transformer are utilized as windings in another component, e.g., an inductor, the windings themselves or the transformer and inductor should have the same reference number designation or name. Illustratively, if a transformer T1 has a primary winding P1 and a secondary winding P2, and an inductor is utilizing the same secondary winding of the transformer T1, then the inductor winding should be identified either in the specification or in the schematic as being the same secondary winding as that of the transformer, i.e., inductor P2. The MacDonald reference does not disclose in the specification that inductors L2 and L3 are secondary windings of the transformer and

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1 Pages 3 and 7 of http://library.thinkquest.org/10784/circuit_symbols.html; page 3 of http://www.play-hookey.com/dc_theory/components_inductors.html; page 2 of

also does not identify in the schematic that either inductor L2 or L3 utilizes the same windings (by either using the same designation or the same reference numeral).

Finally, if the Examiner's statements were correct, the device specified in the MacDonald reference would be inoperable because the inductor L3 in the DC filter 25 would be directly coupled to the noise source that the DC filter 25 is attempting to eliminate. Specifically, the MacDonald reference discloses a AC-to-DC power converter. The AC-to-DC power converter receives an AC input at an input terminal 12 and utilizes a full-wave bridge rectifier and a filter capacitor to create a DC voltage from which the switcher operates. An inductor L1 offers additional EMI filtering of the AC signal after the AC input signal has been rectified. A main controller is configured as a pulse width modulator with totem pole driver transistors coupled thereto. The power converter has a main power switch which drives the main transformer. The transformer, Schottky diode D11, filter capacitors C24 and C25 combine to provide the DC output voltage at a node N1. *(MacDonald, col. 4, lines 40 - 56).* A filter circuit 25 allows for additional filtering of the DC output voltage derived at node N1. The filter circuit includes an inductor L3, capacitor C26, and a transformer NF1. The filter circuit produces a filtered DC output voltage at output node N2 having less than 100 mv peak-to-peak noise and ripple. *(MacDonald, col. 4, lines 57 - 62).*

Assuming that the MacDonald reference inductor L3 was utilizing the secondary windings of the transformer, the filter circuit 25 would not be able to provide filtering of the DC output voltage at node N1. The filter circuit 25 filters, among other things, a noise signal created by the totem pole driver transistors in the AC/DC converter 22. This noise signal is induced from the primary winding of the transformer to the

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http:/www.allaboutcircuits.com/vol_1/chpt_15/1.html.

secondary winding of the transformer. If the Examiner's statements were correct and inductor L3 utilized the secondary windings of the transformer, then additional noise would be coupled into directly into the filter circuit and would not be filtered out by the inductor L3, capacitor C26, and transformer NF1 (the filter circuit 25). Further, according to the Examiner's logic, NF31 would also have to be utilizing the secondary windings of the transformer T1, which would introduce additional noise into the DC output signal and this also could not be filtered out by the filter circuit.

Accordingly, applicant respectfully submits that the MacDonald reference does not disclose, teach or suggest the power converter of claim 4. The MacDonald reference does not disclose a power converter including an input voltage system, a transformer, and a boost circuit, **wherein the secondary winding of the transformer is configured as a boost inductor in the boost circuit.** As discussed above, the inductors L2 and L3 of the MacDonald reference do not utilize secondary windings of the transformer, they are just inductors with iron cores. Accordingly, claim 1, as amended, distinguishes over the MacDonald reference.

Independent claim 47, 57, and 59 recite limitations similar to claim 1. Accordingly, applicant respectfully submits that independent claims 47, 57, and 59 distinguish over the MacDonald reference for reasons similar to those discussed above in regard to claim 1, as amended.

Claims 2 - 16, 18, 20, and 48 - 51 depend, indirectly or directly, on claims and 47. Accordingly, applicant respectfully submits that dependent claims 2 - 16, 18, 20, and 48 - 51 distinguish over the MacDonald reference for reasons similar to those discussed above in regard to independent claim 1, as amended.

Independent claim 58 distinguishes over the cited references. Independent claim 58 recites:

> A power converter capable of receiving an AC input voltage and a DC input voltage, comprising:
> a first capacitor, coupled to the DC input voltage, which is charged to the DC input voltage;
> a transformer, coupled to a primary switching circuit and utilized if an AC input voltage is supplied, said transformer having a primary winding and a secondary winding where the secondary winding includes a center tap to separate the secondary winding into a first autowinding and a second autowinding and **the DC input voltage is coupled to the center tap of secondary winding of the transformer**; and
> **a control circuit coupled to switching devices, the switching devices coupled to the secondary winding, where the control circuit and the switching devices control the first autowinding and the second autowinding to charge a second capacitor to a DC voltage, wherein the DC input voltage and the DC voltage are added together to create an increased voltage at a first node.**

The MacDonald reference does not disclose, teach, or suggest the power converter of claim 58. The Examiner states that the MacDonald reference does not disclose that a DC input is supplied to the center tap of a transformer. *(Office Action, page 3)*. The applicant agrees with the Examiner and respectfully submits that claim 58 distinguishes over the MacDonald reference for at least the reasons that the MacDonald reference does not disclose application of a DC input voltage to a center tap of a secondary winding of the transformer.

The Riggio reference does not make up for the deficiencies of the MacDonald reference. The Examiner states that the Riggio reference discloses the supplying of a DC input voltage to a center tap of a transformer to provide galvanic isolation and minimal voltage overshoot in the secondary which minimizes filtering requirements. *(Office Action, page 3)*. In making this statement, <u>the Examiner is not addressing the highlighted claim limitations recited above</u>. For example, in claim 58, there is no

mention of galvanic isolation and minimum voltage overshoot so this statement is irrelevant to the claimed invention.

The applicant respectfully requests that the Examiner specifically point out how the Riggio reference discloses 1) that a DC input voltage is coupled to a tap on the secondary winding of the transformer and also 2) that a control circuit is located on the secondary side of the transformer to create a transformed voltage utilizing the secondary winding (i.e., the first autowinding and the second autowinding). The Examiner points to the DC/DC booster converter 24 as being controlled by a controller to create a boosted voltage but there is no disclosure that any winding of the transformer is utilized in that circuit. In fact, the voltage produced from the DC/DC booster converter 24 of the MacDonald reference does not even utilize the secondary winding of transformer T1 of the MacDonald reference. As illustrated, it is supplied directly to node N1. Accordingly, applicant respectfully submits that claim 58 distinguishes over the Riggio / MacDonald reference combination.

Independent claim 52, as amended, recites limitations similar to those recited in claim 58. Accordingly, applicant respectfully submits that independent claim 52 distinguishes over the MacDonald / Riggio reference combination, for similar reasons to those discussed above in regard to independent claim 58.

Claims 23 - 36 and 53 - 56 depend, indirectly or directly, on independent claims 58 and 52, respectively. Accordingly, applicant respectfully submits that claims 23 - 36 and 53 - 56 distinguish over the MacDonald / Riggio reference combination, for the same reasons as discussed above in regard to independent claim 58.

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Applicant believes that the foregoing amendments place the application in condition for allowance, and a favorable action is respectfully requested. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call either of the undersigned attorneys at the Los Angeles telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance should the Examiner believe that such a telephone conference would advance prosecution of the application.

Respectfully submitted,

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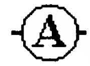
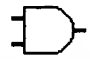
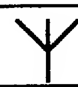
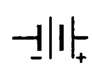
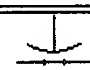
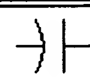
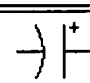
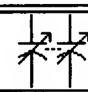
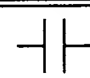
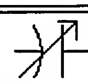
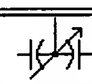
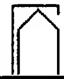
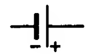
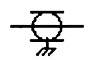
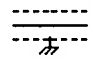
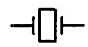
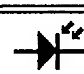
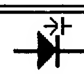
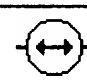
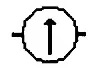
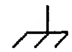
Circuit Schematic Symbols

Note: The schematics symbols for most major electrical components can be found in this table. However, each component may have numerous possible representations. In cases where there is more than one common symbol we have tried to give an alternate representation.

COMPONENT	SYMBOL	ALTERNATE
Ammeter		
And Gate		
Antenna, Balanced		
Antenna, General		
Antenna, Loop, Shielded		
Antenna, Loop, Unshielded		
Antenna, Unbalanced		
Attenuator, Fixed		
Attenuator, Variable		
Battery		
Capacitor, Feedthrough		
Capacitor, Fixed, Nonpolarized		
Capacitor, Fixed, Polarized		
Capacitor, Ganged, Variable		
Capacitor, General		
Capacitor, Variable, Single		
Capacitor, Variable, Split-Stator		
Cathode, Cold		

		
Cathode, Directly Heated		
Cathode, Indirectly Heated		
Cavity Resonator		
Cell		
Circuit Breaker		
Coaxial Cable		
Crystal, Piezoelectric		
Delay Line		
Diode, General		
Diode, Gunn		
Diode, Light-Emitting		
Diode, Photosensitive		
Diode, Photovoltaic		
Diode, Pin		
Diode, Varactor		
Diode, Zener		
Directional Coupler		
Exclusive-Or Gate		
Female Contact, General		
Ferrite Bead		

		
Fuse		
Galvanometer		
Ground, Chassis		
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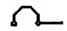
Handset		
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Headphone, Single		
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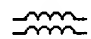
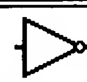
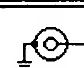
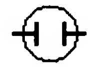
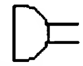
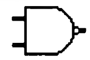
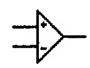
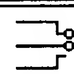
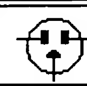
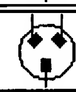
Inductor, Bifilar		
Inductor, Iron-Core		
Inductor, Tapped		
Inductor, Variable		
Integrated Circuit		
Inverter		
Jack, Coaxial		
Jack, Phone, 2-Conductor		
Jack, Phone, 2-Conductor Interrupting		
Jack, Phone, 3-Conductor		
Jack, Phono		
Key, Telegraph		

		
Lamp, Incandescent		
Lamp, Neon		
Male Contact, General		
Microphone		
Nand Gate		
Negative Voltage Connection		
Nor Gate		
Operational Amplifier		
Or Gate		
Outlet, Utility, 117-V		
Outlet, Utility, 234-V		
Photocell, Tube		
Plug, Phone, 2-Conductor		
Plug, Phone, 3-Conductor		
Plug, Phono		
Plug, Utility, 117-V		
Plug, Utility, 234-V		
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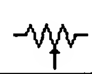
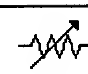
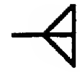
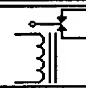
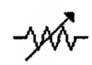
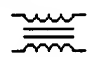
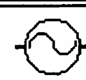
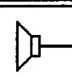
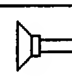
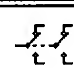
Potentiometer		
Probe, Radio-Frequency		

		
Rectifier, Semiconductor		
Rectifier, Silicon-Controlled		
Rectifier, Tube-Type		
Relay, DPDT		
Relay, DPST		
Relay, SPDT		
Relay, SPST		
Resistor		
Resonator		
Rheostat		
Saturable Reactor		
Shielding		
Signal Generator		
Speaker		
Switch, DPDT		
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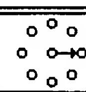
Switch, Momentary-Contact		
Switch, Rotary		
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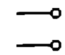
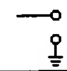
Switch, SPST		

		
Terminals, General, Balanced		
Terminals, General, Unbalanced		
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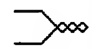
Thermocouple		
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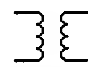
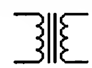
Transformer, Air-Core		
Transformer, Iron-Core		
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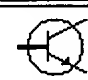
Transformer, Tapped Secondary		
Transistor, Bipolar, npn		
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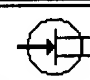
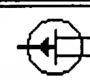
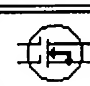
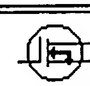
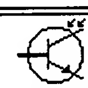
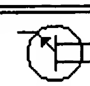
Transistor, Field-Effect, N-Channel		
Transistor, Field-Effect, P-Channel		
Transistor, Metal-Oxide, Dual-Gate		
Transistor, Metal-Oxide, Single-Gate		
Transistor, Photosensitive		
Transistor, Unijunction		
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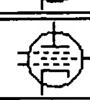
Tube, Pentode		
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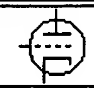
Tube, Tetrode		
Tube, Triode		
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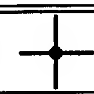
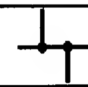
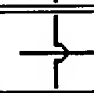
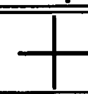
Voltmeter		
Wattmeter		
Wires		
Wires, Connected, Crossing		
Wires, Not Connected, Crossing		

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Basic Electronic Components and Circuits. . .

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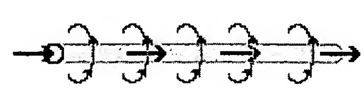
Circuit Components: the Inductor

One characteristic of electricity is that as current flows it generates a magnetic field. The greater the current, the stronger the magnetic field it generates. However, this magntic field is generally small and weak, an can't be used for very much. Indeed, most of the time it doesn't have a noticeable effect on anything less sensitive than a small compass needle. Is there a way we can intensify this field so we can experiment with it and study its properties?

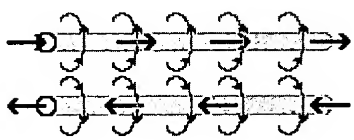


In the figure to the right, electrons are moving through a wire from left to right, as shown by the blue arrows. This motion of electrically charged electrons generates a circular magnetic field around the wire, and extending along the entire length of the wire, as indicated by the green lines. The direction of the

magnetic lines of force shown here is upwards on the "front" side of the wire, and downwards behind it.

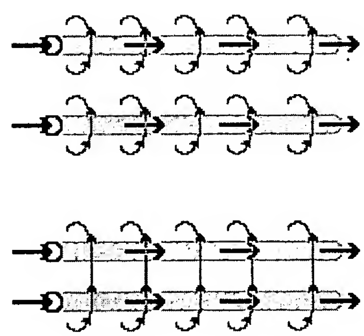
You can always determine the direction of the magnetic field by applying the *Left Hand Rule*: Grasp the wire in your left hand, with your thumb pointing along the wire in the direction of electron flow. Your fingers will curl around the wire, pointing in the direction of the magnetic field.

Note: Under the original assumptions of conventional current, this was stated as the *Right Hand Rule*, because current carriers were assumed to be positive. Since we are using the more modern electron current specifications, we must switch to a Left Hand Rule to correctly describe the direction of the magnetic field.

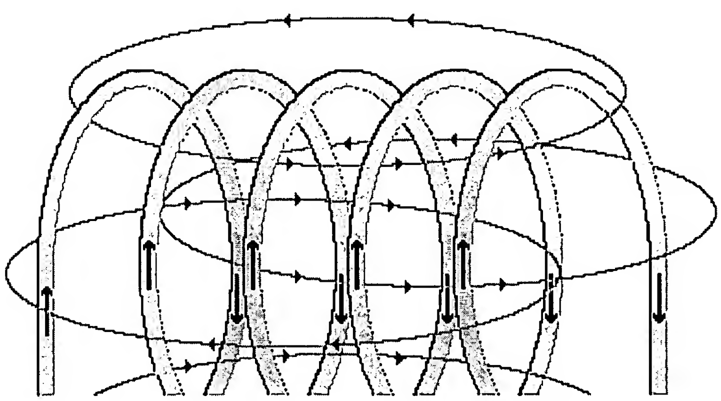


If we have two wires close together, with the same current flowing through them but in opposite directions as shown to the left, the magnetic field betwen the two wires will be the sum of the two separate fields, and therefore will be stronger than the field around a single wire. However, this doesn't help much — adding a third wire must reinforce one of these two, but oppose the other. Hmmmm. Maybe we can make use of this phenomenon, but clearly it won't work by itself.

On the other hand, if we put two wires next to each other with each one carrying the same amount of current in the same direction (see the figure to the right), an interesting phenomenon occurs. The magnetic fields between the two wires oppose each other and cancel out, but the overall field around both wires together is strengthened. Adding more wires in this manner enhances this effect, making the overall magnetic field still stronger.



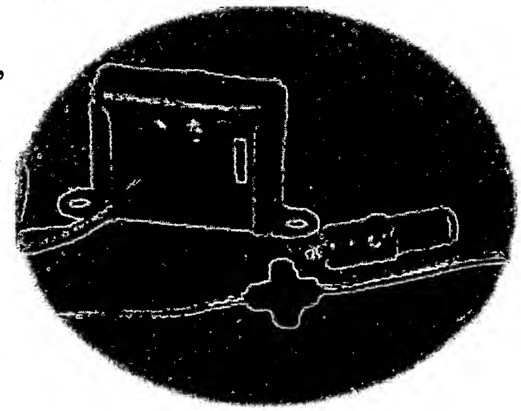
Is there an easy way to acomplish this?



The figure to the left shows a wire that has been wrapped into a spiral structure, forming a *coil*. This structure combines both effects of adjacent, current-carrying wires discussed above. The magnetic field through the middle of the coil is directed from left to right, and is highly intensified. This magnetic field

gives the coil some interesting and useful properties, which we will cover in detail when we discuss the behavior of coils in an electrical circuit.

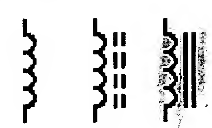
The property conferred on this component by the concentrated magnetic field is known as *inductance*. The effect of inductance is to oppose any change in current through itself. It does this by generating an EMF across its terminals which opposes the applied voltage. As a result, the current through an inductance can only change gradually; it cannot change instantaneously as it could with only resistors in the circuit. The coil will store or release energy in its magnetic field as rapidly as necessary to oppose any such change.



The unit of inductance is the *henry* (H). By definition, one henry is that amount of inductance that will cause a counter EMF of 1 volt to be generated when the current changes at a rate of 1 ampere/second. Practical values of inductance range from a few microhenrys (µH) up to tens of henrys.

The image to the right shows a few typical, commercially-available coils. The large one to the left is mounted on an iron core to help concentrate the magnetic field and thus augment the inductance of the component. It has an inductance of 1 henry. To its right is a small coil with a movable core made partly of powdered iron. This allows the core to be adjusted to set the precise value of inductance, which is on the order of 30 microhenrys (µH). In the foreground is a 50 millihenry (mH) coil, consisting of multiple layers of wire wrapped on a non-magnetic core.

Each of these devices can be purchased directly, and each of them has practical applications in electronics.



The schematic symbols to the right represent inductors, or coils. Symbol A is used for a basic inductor with only air anywhere in the magnetic field. Symbol B shows an inductor with a core made of powdered iron (known as *ferrite*). Such a core helps to concentrate the magnetic field somewhat, and so increases the effective inductance of the coil. Symbol C shows a laminated iron core. This kind of core concentrates the magnetic field greatly, and therefore increases the effective inductance even more than a ferrite core.

As you can see, in each case the symbol itself suggests the multiple turns of wire that form the coil.

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Magnetic fields and inductance

Magnetic fields and inductance

Whenever electrons flow through a conductor, a magnetic field will devel conductor. This effect is called *electromagnetism*. Magnetic fields effect t electrons in an atom, and can cause physical force to develop between a just as with electric fields developing force between electrically charged | electric fields, magnetic fields can occupy completely empty space, and ε distance.

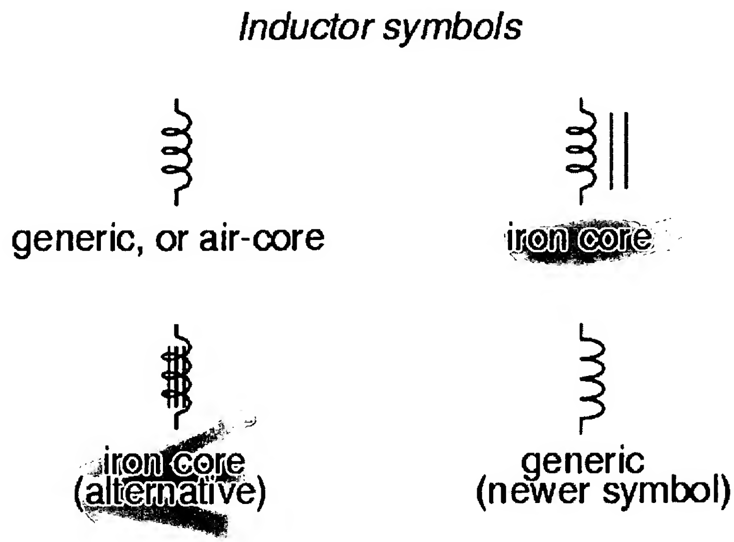
Fields have two measures: a field *force* and a field *flux*. The field *force* is "push" that a field exerts over a certain distance. The field *flux* is the tot: effect, of the field through space. Field force and flux are roughly analog ("push") and current (flow) through a conductor, respectively, although 1 in totally empty space (without the motion of particles such as electrons) can only take place where there are free electrons to move. Field flux ca space, just as the flow of electrons can be opposed by resistance. The ar that will develop in space is proportional to the amount of field force app amount of opposition to flux. Just as the type of conducting material dict conductor's specific resistance to electric current, the type of material oc through which a magnetic field force is impressed dictates the specific op magnetic field flux.

Whereas an electric field flux between two conductors allows for an accu electron charge within those conductors, an electromagnetic field flux all "inertia" to accumulate in the flow of electrons through the conductor pr

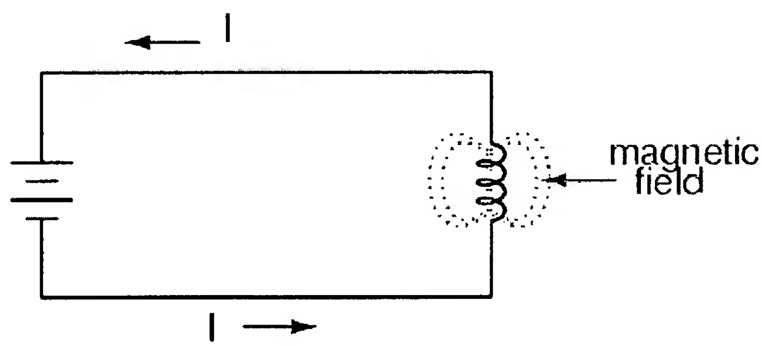
Inductors are components designed to take advantage of this phenomen length of conductive wire in the form of a coil. This shape creates a stror than what would be produced by a straight wire. Some inductors are forı wound in a self-supporting coil. Others wrap the wire around a solid core type. Sometimes the core of an inductor will be straight, and other times a loop (square, rectangular, or circular) to fully contain the magnetic flux options all have effect on the performance and characteristics of inductoı

The schematic symbol for an inductor, like the capacitor, is quite simple, than a coil symbol representing the coiled wire. Although a simple coil sh

symbol for any inductor, inductors with cores are sometimes distinguishe
of parallel lines to the axis of the coil. A newer version of the inductor sy
with the coil shape in favor of several "humps" in a row:



As the electric current produces a concentrated magnetic field around th
equates to a storage of energy representing the kinetic motion of the ele
coil. The more current in the coil, the stronger the magnetic field will be,
energy the inductor will store.

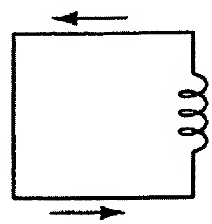


Because inductors store the kinetic energy of moving electrons in the for
field, they behave quite differently than resistors (which simply dissipate
of heat) in a circuit. Energy storage in an inductor is a function of the am
through it. An inductor's ability to store energy as a function of current r
to try to maintain current at a constant level. In other words, inductors t
changes in current. When current through an inductor is increased or de
inductor "resists" the *change* by producing a voltage between its leads in
to the *change*.

To store more energy in an inductor, the current through it must be incr
that its magnetic field must increase in strength, and that change in fielc
the corresponding voltage according to the principle of electromagnetic s
Conversely, to release energy from an inductor, the current through it m
This means that the inductor's magnetic field must decrease in strength,
field strength self-induces a voltage drop of just the opposite polarity.

Just as Isaac Newton's first Law of Motion ("an object in motion tends to
object at rest tends to stay at rest") describes the tendency of a mass to
velocity, we can state an inductor's tendency to oppose changes in curre

"Electrons moving through an inductor tend to stay in motion; electrons
inductor tend to stay at rest." Hypothetically, an inductor left short-circu
constant rate of current through it with no external assistance:

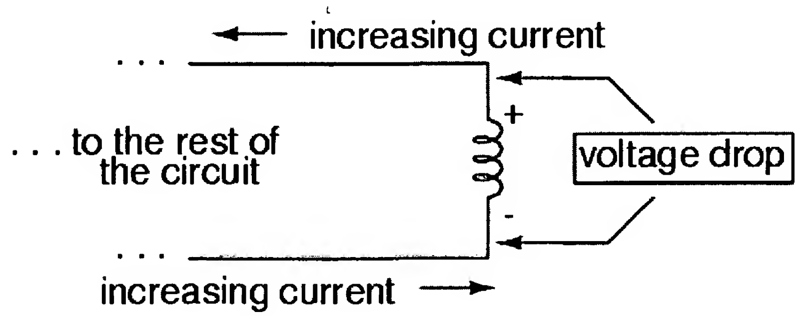


current sustained with
the inductor short-circuited

Practically speaking, however, the ability for an inductor to self-sustain c
only with superconductive wire, as the wire resistance in any normal ind
cause current to decay very quickly with no external source of power.

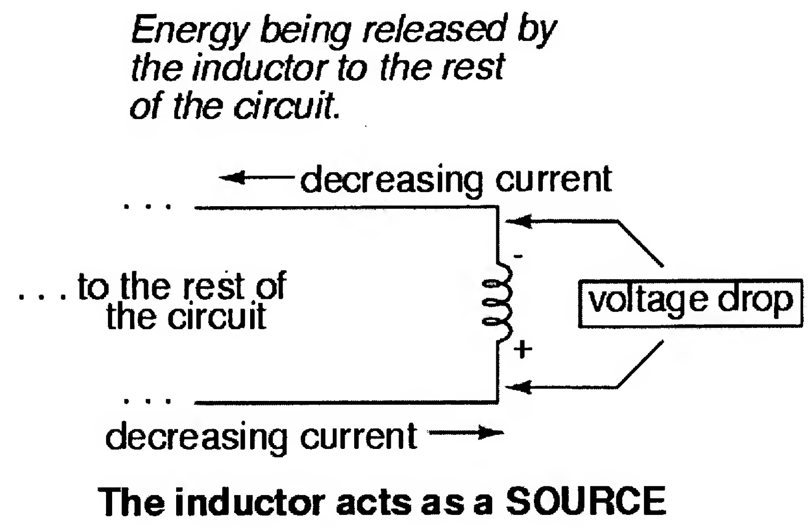
When the current through an inductor is increased, it drops a voltage op
of electron flow, acting as a power load. In this condition the inductor is
because there is an increasing amount of energy being stored in its mag
polarity of the voltage with regard to the direction of current:

Energy being absorbed by the inductor from the rest of the circuit.



The inductor acts as a LOAD

Conversely, when the current through the inductor is decreased, it drops
the direction of electron flow, acting as a power source. In this condition
to be *discharging*, because its store of energy is decreasing as it release
magnetic field to the rest of the circuit. Note the polarity of the voltage v
direction of current.



If a source of electric power is suddenly applied to an unmagnetized indu
will initially resist the flow of electrons by dropping the full voltage of the
begins to increase, a stronger and stronger magnetic field will be createc
from the source. Eventually the current reaches a maximum level, and s
this point, the inductor stops absorbing energy from the source, and is d
voltage across its leads, while the current remains at a maximum level. /
stores more energy, its current level increases, while its voltage drop de
this is precisely the opposite of capacitor behavior, where the storage of
an increased voltage across the component! Whereas capacitors store th
by maintaining a static voltage, inductors maintain their energy "charge"
steady current through the coil.

The type of material the wire is coiled around greatly impacts the streng
field flux (and therefore how much stored energy) generated for any give
current through the coil. Coil cores made of ferromagnetic materials (suc
encourage stronger field fluxes to develop with a given field force than n
substances such as aluminum or air.

The measure of an inductor's ability to store energy for a given amount (
called *inductance*. Not surprisingly, inductance is also a measure of the i
opposition to changes in current (exactly how much self-induced voltage
for a given rate of change of current). Inductance is symbolically denote
and is measured in the unit of the Henry, abbreviated as "H."

An obsolete name for an inductor is *choke*, so called for its common usa
("choke") high-frequency AC signals in radio circuits. Another name for a
used in modern times, is *reactor*, especially when used in large power ap
these names will make more sense after you've studied alternating curre
theory, and especially a principle known as *inductive reactance*.

- **REVIEW:**
- Inductors react against changes in current by dropping voltage in
necessary to oppose the change.
- When an inductor is faced with an increasing current, it acts as a l
voltage as it absorbs energy (negative on the current entry side a
current exit side, like a resistor).
- When an inductor is faced with a decreasing current, it acts as a s
voltage as it releases stored energy (positive on the current entry
on the current exit side, like a battery).
- The ability of an inductor to store energy in the form of a magneti
consequently to oppose changes in current) is called *inductance*. I

the unit of the *Henry* (H).

- Inductors used to be commonly known by another term: *choke*. Ir applications, they are sometimes referred to as *reactors*.

Forward >